The proposed nanotechnology for the first time allows one to produce nano-sized adjacent elements of different thickness made of various materials (particularly of Si) by single conventional optical UV photolithography. These advantages significantly extend functional capabilities of the devices and simplify removal of undesirable gases and heat dissipation.

The developed nanotechnology is promising for production of nanodevices; nanowires; microelectrodes for new local micro- and nano- electrodeposition and etching techniques; press molds with nano-sized pillars for nanosprint lithography (NIL); quartz masks available so far) since these transparent tips are mechanically stronger (than of the quartz masks available so far) since these transparent tips are mechanically strengthened by the second-group elements located between these tips.

The competitive resistless (maskless) method of direct formation of IC elements, photomasks with semitransparent masking elements, in particular with nano-sized elements, and microdevices by means of photoinduced (laser-induced) local anodic oxidation of valve materials, e.g. silicon, and by subsequent selective etching of oxidized regions is proposed.

One of the objects of the present work is resistless direct formation of final elements and devices by means of laser-induced local anodic oxidation of valve materials, for example silicon. The next object is elimination of disadvantages of the LIGA process and available resistless etching techniques. This additive method entirely excludes the etching of conducting and dielectric films deposited on different levels, and cutting in dielectric layers and reactive ion etching.

The advantages of the proposed design of the quartz mask for LADI are that the mask projections are mechanically stronger (than of the quartz masks available so far) since these transparent tips are mechanically strengthened by the second-group elements located between these tips.